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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/778,996	02/07/2001	Konstantinos I. Papathomas	END920000065US1	8725

7590 06/15/2006

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EXAMINER
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SELLERS, ROBERT E

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Applicant(s)	Applicant(s)	
	09/778,996	PAPATHOMAS, KONSTANTINOS I.	
	Examiner	Art Unit	
	Robert Sellers	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 4 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 14, 18, 41, 43, 44, 46, 58-62 and 82-98 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 14, 18, 41, 43, 44, 45, 58-62 and 82-87, 89-93 and 95-98 is/are rejected.
- 7) ☒ Claim(s) 88 and 94 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

This is responsive the Request for Continued Examination filed May 4, 2006. The amendment filed May 4, 2006 on pages 5 and 6 lists claim 47 drawn to a non-elected invention as both withdrawn and cancelled. It will be assumed that claim 47 is cancelled.

The amendment to independent claims 1 and 41 adopting the language suggested in the advisory action mailed March 13, 2006 (pages 2 and 3, paragraphs 4 and 5) pertaining to the insertion of the supported lower limit of about 1.0% by weight of flexibilizer and a thermoplastic other than the flexibilizer overcomes the 35 U.S.C. 102(e) rejection over Shiobara et al. Patent No. 6,376,100 and the 35 U.S.C. 103(a) rejection over Christie et al. Patent No. 5,668,059 and Johannson et al. Patent No. 6,090,474 in view of Shiobara et al. '100.

1. Claims 88 and 94 are objected to as being dependent upon cancelled claims 54 and 78, respectively.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 41, 43, 44, 46, 47, 82, 86, 93 and 95-98 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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2. Independent claim 41 in line 8 defines from about 1.0% by weight to about 5% by weight of a flexibilizing agent, then in lines 6-7 denotes from 2 percent to about 5 percent by weight of the flexibilizing agent. The actual proportion of flexibilizing agent is unclear.

The text of section 103(a) of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 14, 18, 41, 43, 46, 59, 61, 62 and 83, 85-87, 90, 93 and 96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiobara et al. Patent

No. 5,225,484.

3. Shiobara et al. (col. 1, lines 31-34) discloses a semiconductor encapsulant (col. 8, line 46) comprising an epoxy resin, curing agent, from about 1 to about 15 parts by weight per 100 parts by weight of the epoxy resin (col. 4, lines 30-36, from about 1 to 13% by weight) of a thermoplastic resin impregnated with an organic silicon compound, from about 0.5 to about 10% by weight of a silicon-based flexibilizer (col. 8, lines 15-30), an inorganic filler such as spherical fused silica in a particle size of from about 5 to about 20 microns treated with silane coupling agents (col. 7, lines 50-51 and 57-60) and additives (col. 8, lines 30-37).

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4. Although the claimed spherical or spheroidal shape of the filler is not exemplified (cols. 11-12, Table 2), Shiobara et al. discloses fused silica in spherical form (col. 7, lines 50-51). It would have been obvious to employ the exemplified silica in the disclosed spherical form in order to enhance the flow properties (col. 7, lines 53-56).

Claims 58, 60, 82, 84, 91, 92, 97 and 98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiobara et al. as applied to the claims hereinabove, and further in view of Christie et al. 5,668,059 and Papathomas et al. Patent No. 6,790,473.

5. Shiobara et al. does not recite the surfactant of claims 58 and 82 such as the polyethylene glycol-p-tert-octylphenyl ether of claims 91 and 97 (i.e. the elected species of Triton X-100 according to Chemical abstracts registry no. 9002-93-1), nor the organic dye of claims 60 and 84 such as the nigrosine of claims 92 and 98.

6. Christie et al. and Papathomas et al. have been previously applied and discussed in detail, particularly in the non-Final rejection mailed November 7, 2005. It would have been obvious to incorporate from about 0.5% to about 3% of the Triton X-100 surfactant of Christie et al. (col. 10, lines 60-64) and Papathomas et al. as an additive of Shiobara et al. (col. 16, lines 55-60) in order to facilitate the mixing of the filler with the epoxy resin. It would have been obvious to include less than about 0.2% of the nigrosine organic dye of Christie et al. (col. 11, lines 34-36) as an additive of Shiobara et al. in order to impart a color to the encapsulant.

Claims 89 and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiobara et al. as applied to the claims hereinabove, and further in view of the Materials Research Society Symposium article by Shi et al.

7. Shiobara et al. does not recite the claimed zirconium tungstate as the filler. Shi et al. teaches the use of zirconium tungstate as a filler in an epoxy resin composite for electronic applications. It would have been obvious to employ the zirconium tungstate of Shi et al. as the inorganic filler of Shiobara et al. in order to impart a negative coefficient of thermal expansion to the encapsulants.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Sellers whose telephone number is (571) 272-1093. The examiner can normally be reached on Monday to Friday from 9:30 to 6:00. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).



Robert Sellers  
Primary Examiner  
Art Unit 1712